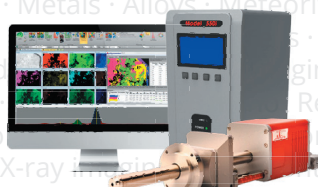
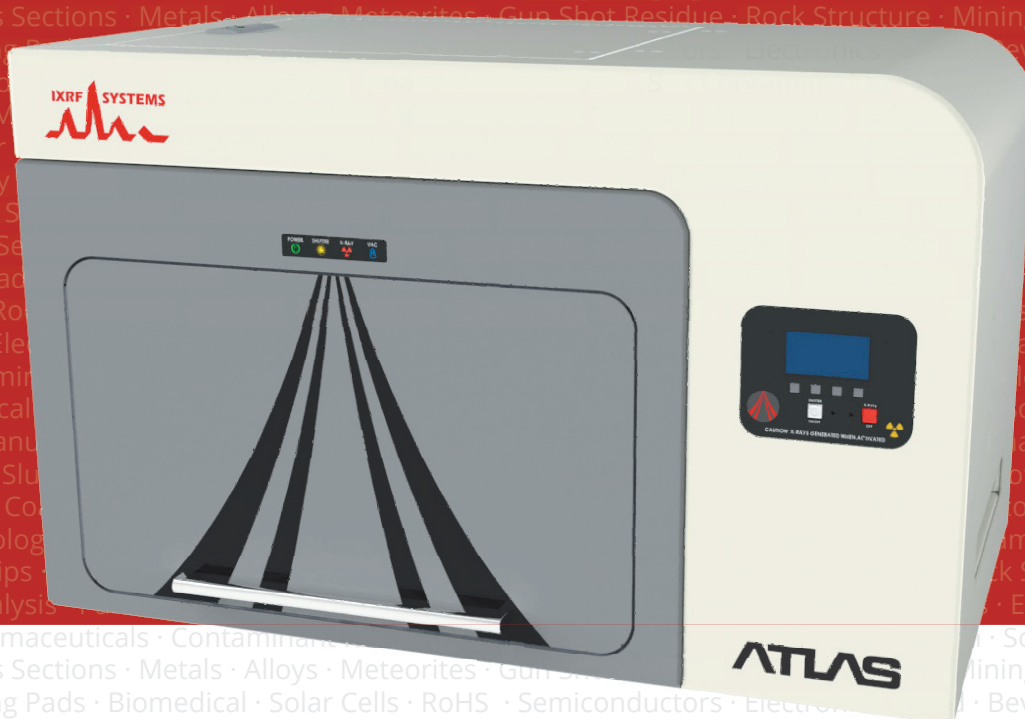


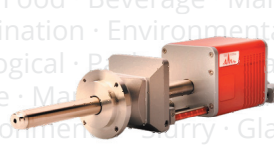
RAISING THE STANDARD FOR MICROANALYSIS



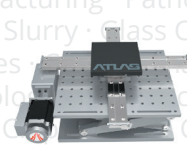
New EDX
Microanalysis



SEM-XRF



SDD Detectors



Stages



EDX
Microanalysis
Upgrade

Visit us at M&M Booth #710

For more information on our product offering please email sales@ixrfsystems.com or visit www.ixrfsystems.com.



EMS has it! *the latest technology for...*

**Electron
Microscopy
Sciences**

CRYO-SEM Preparation



The PP3010T is a highly automated, easy-to-use, column-mounted, gas-cooled cryo preparation system suitable for most makes and models of SEM, FE-SEM and FIB/SEM. The PP3010T has all the facilities needed to rapidly freeze, process and transfer specimens.

Now, building on the success of the PP3010T cryo-SEM/FIB/SEM preparation system, we are pleased to announce three new related products for ambient and cryo temperature transfer...

NOW AVAILABLE: NEW Specimen Transfer Systems

PP3004 QuickLok

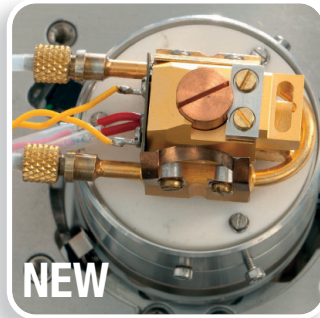
Ambient temperature airlock for SEM, FIB/SEM, beamline and vacuum platforms



- Rapid specimen exchange
- Vacuum and inert gas transfer
- Field-retrofitable to most systems
- Upgrade path to CoolLok
- Custom designed holders available
- 3 year warranty

PP3005 SEMCool

Non-airlock cryo cooling for SEM, FIB/SEM, beamline and vacuum platforms



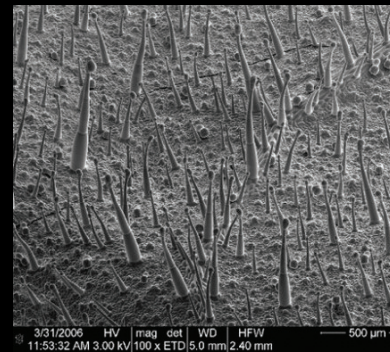
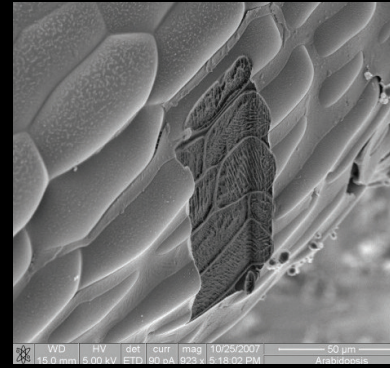
- Temperature range down to -190°C , with stability better than 0.5°C
- Off-column cooling with all-day runtime between fills
- Independent cooling of cold stage and cold trap
- Upgrade path to CoolLok
- 3 year warranty

PP3006 CoolLok

Cryo transfer systems for SEM, FIB/SEM, beamline and vacuum platforms



- Rapid specimen exchange
- Temperature range down to -190°C with stability better than 0.5°C
- Off-column cooling with all-day runtime between fills
- Independent cooling of cold stage and cold trap
- Vacuum or inert gas transfer
- Rapid specimen freezing option
- 3 year warranty



See how it works... Learn how to do it...

We've added video content to our website to help you get to know our latest products even better!

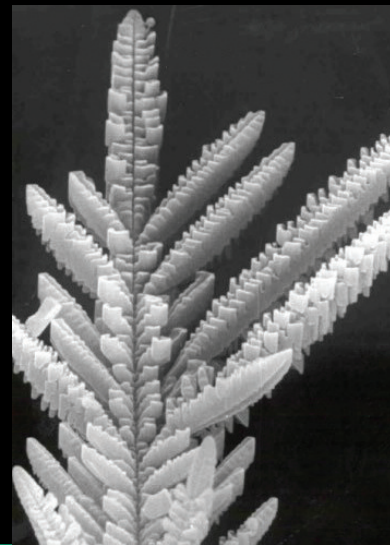
Stop by and see what it's all about.

PP3004 QuickLok

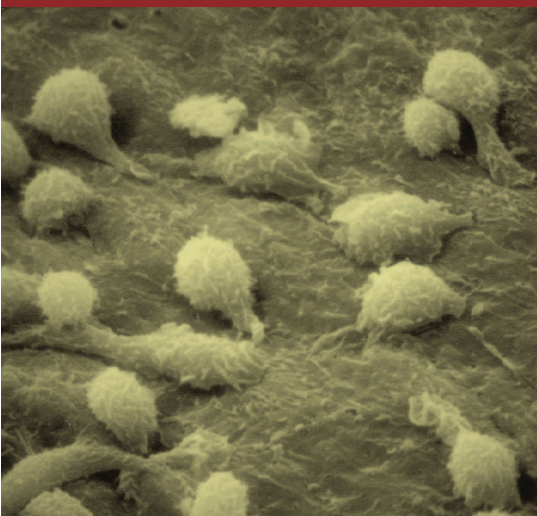
**CONTACT US FOR
MORE INFORMATION...**

**Electron
Microscopy
Sciences**

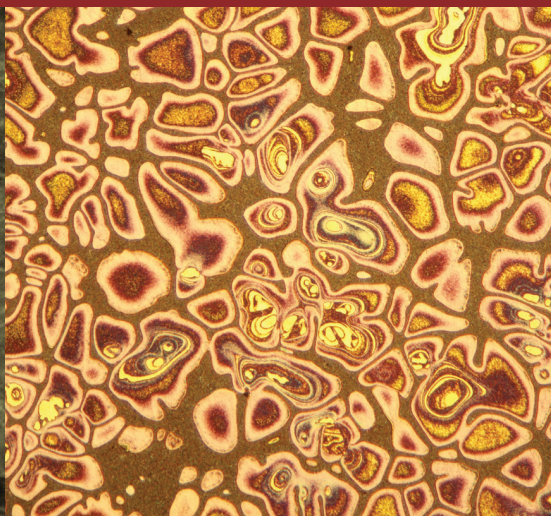
P.O. Box 550 • 1560 Industry Rd.
Hatfield, Pa 19440
Tel: (215) 412-8400
Fax: (215) 412-8450
email: sgkcck@aol.com
or stacie@ems-secure.com
www.emsdiasum.com



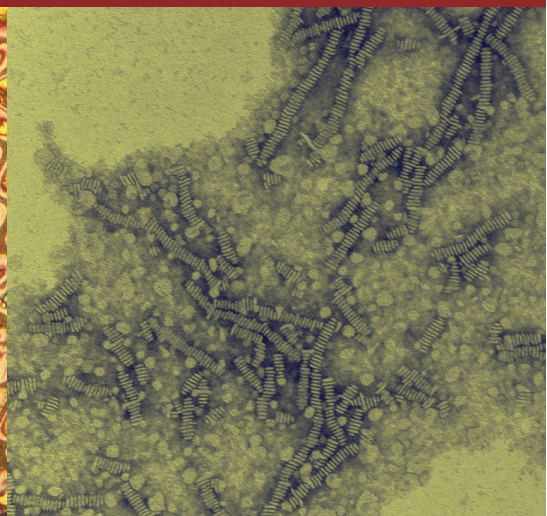
Visit the meeting website often for details on
Symposia, Exhibits, Biological and Physical Sciences Tutorials,
In-Week Intensive Workshops, Posters,
Sunday Short Courses and Pre-Meeting Congresses



Monocytes (White Blood Cells) Adhering to the Inside Surface of an Artery as Part of an Inflammatory Reaction. W. Gray (Jay) Jerome, Vanderbilt University



Cast A347 Alloy Made by Semi-solid Melting (Mert Fleming's Development) Weck's Reagent in Bright Field. George Vander Voort, Consultant (Struers Inc.)



High Density Lipoprotein (HDL; the good cholesterol carrier) Stacking Together in Solution. W. Gray (Jay) Jerome, Vanderbilt University



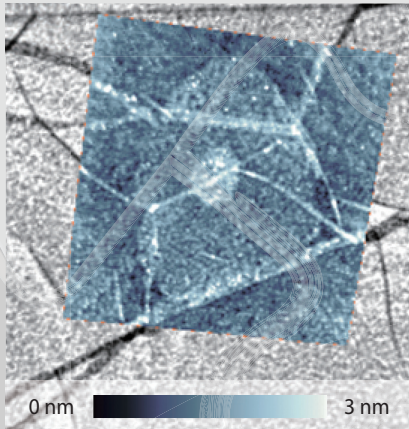
M&M 2016
**MICROSCOPY &
MICROANALYSIS**
July 24-28, 2016 • Columbus, Ohio

<http://microscopy.org/MandM/2016>

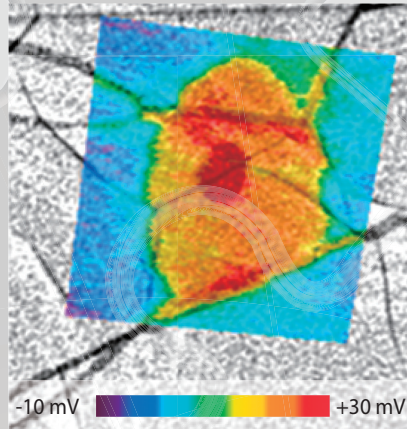
Program Information | Information for Students | Meeting Awards | Exhibitor List & Floor Plan
Registration (*opens February 2016*) | Columbus Hotel Information (*reservations available February 2016*)



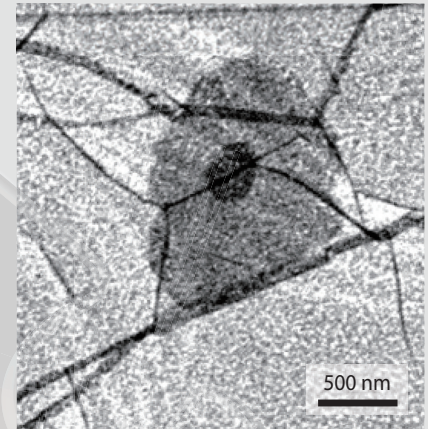
AFM/SEM Comparative Measurements of Graphene



AFM/SEM Overlay*



KFM/SEM Overlay*



SEM

*Overlay images created by using AZblend (ASTRON, Inc.).

New Release **AFM5500M**

Automation

- Automated sample navigation via 4-inch motorized, fully addressable, and programmable stage
- Automated cantilever loading and laser alignment
- Automated and self-optimizing data acquisition

Accuracy

- Piezo-flexure-based scanner design rendering flat and orthogonal scans within the full 200- μm range
- High-resolution and accurate imaging via closed-loop scanner with low sensor noise

Correlative Imaging

- Hitachi-proprietary AFM/SEM shared alignment sample holder
- Sample location is preserved for true correlative AFM/SEM measurements



SU8200 Series
FE-SEM

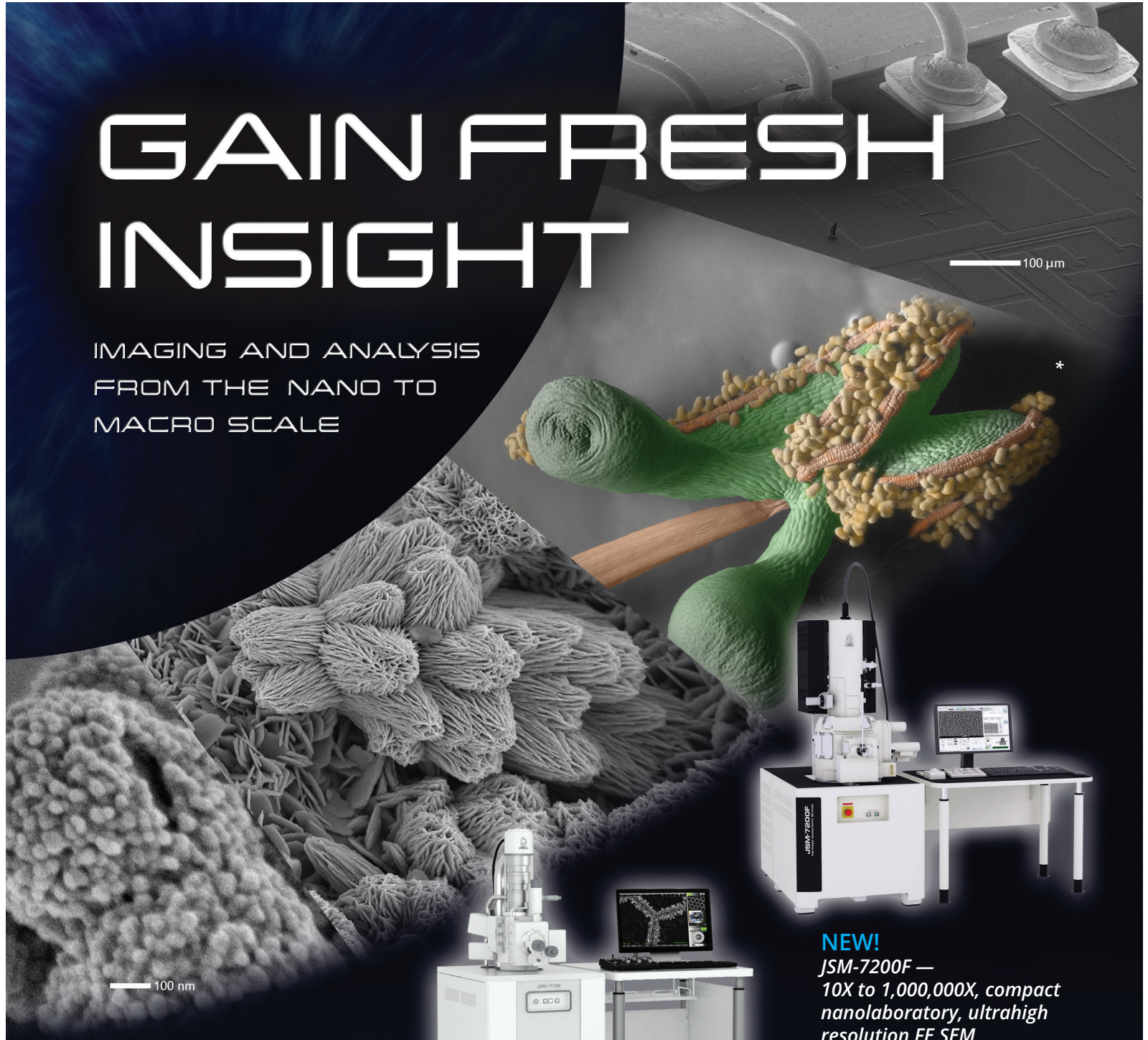
Learn more about the AFM5500M and correlative AFM/SEM system at:
hitachi-hightech.com/us/product_list/?Id=sms2&md=sms2-3



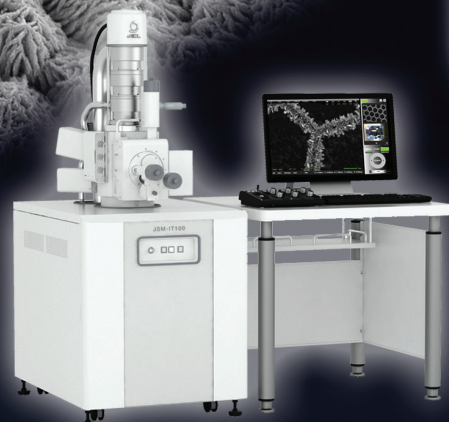
Inspire Innovation through Collaboration

GAIN FRESH INSIGHT

IMAGING AND ANALYSIS
FROM THE NANO TO
MACRO SCALE



NEW!
JSM-7200F —
10X to 1,000,000X, compact
nanolaboratory, ultrahigh
resolution FE SEM



NEW!
JSM-IT100 —
up to 300,000X, SE-BSE-EDS,
LV/HV, versatile compact SEM



NEW!
JCM-6000Plus NeoScope —
10X-60,000X, SE-BSE-EDS, LV/HV

Call us for a demo today!
See our full suite of JEOL SEMs.

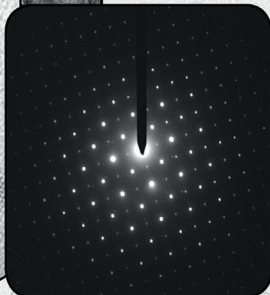
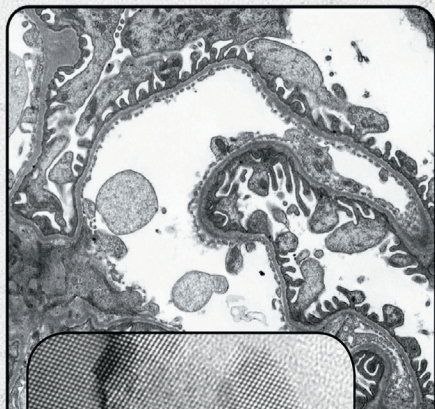
* Courtesy of José R. Almodóvar Rivera, University of Puerto Rico Mayagüez Campus

JEOL
Solutions for Innovation

www.jeolusa.com • salesinfo@jeol.com

SIA

1 TO 50 MEGAPIXELS live and slow scan
MAGNIFICATION FACTOR OF 1 on bottom mounted cameras
DIFFRACTION BEAM STOP on side mounted cameras



Affordable TEM camera systems for research, education, healthcare, and industry since 2001

Scientific Instruments and Applications
2773 Heath Lane • Duluth, GA 30096
(770) 232 7785 • www.sia-cam.com

THE NEW DESK V THE GOLD STANDARD IN SAMPLE PREPARATION



Now upgraded with storage for up to ten recipes and a color touch screen display, the Desk V HP delivers breakthrough electron microscopy sample preparation.

DENTON VACUUM

BARRIERS BECOME BREAKTHROUGHS

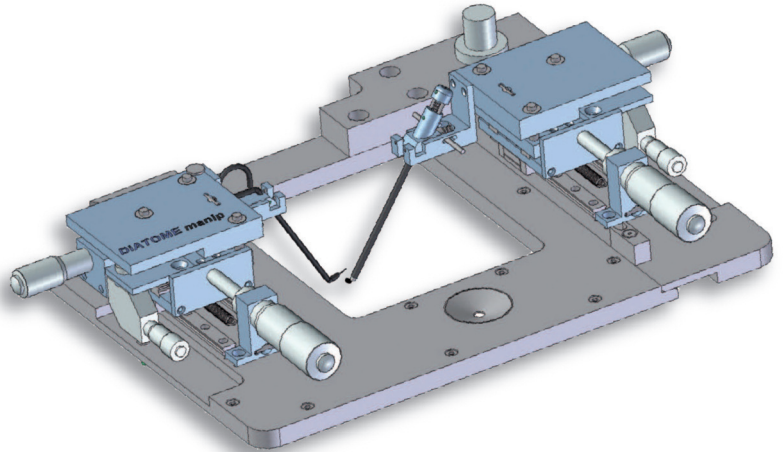
Visit us at:
www.dentonvacuum.com/mt



DiATOME diamond knives

Incomparable...

...and still innovating



NEW DiATOME manip

For easy handling and mounting of section ribbons.

The mounting of the manipulator is easy. The original plate on the cryochamber is removed. The manipulator is fixed in 5 minutes.

Applications

- Frozen hydrated biological samples (CEMOVIS)
- Room temperature sectioning of water sensitive samples

Dry resin sectioning of biological samples for chemical analysis

Dry sectioning of industrial samples such as polymers

Functionality

The left manipulator moves a conductive fibre on which the sections are attached by electrostatic force; the growing ribbon is guided.

The right manipulator guides the grid very precisely below the section ribbon, the sections are attached to the carbon film with electrostatic force.

Compatibility

Leica cryochambers FC6 and FC7 equipped with a Crion ionizer/charger adaption on other cryochambers upon request

A section ribbon attached to a fiber is depicted emerging from a diamond knife edge (left) beneath the ribbon the grid attached to a holder touches the section ribbon.

"NEW" trimtool 90

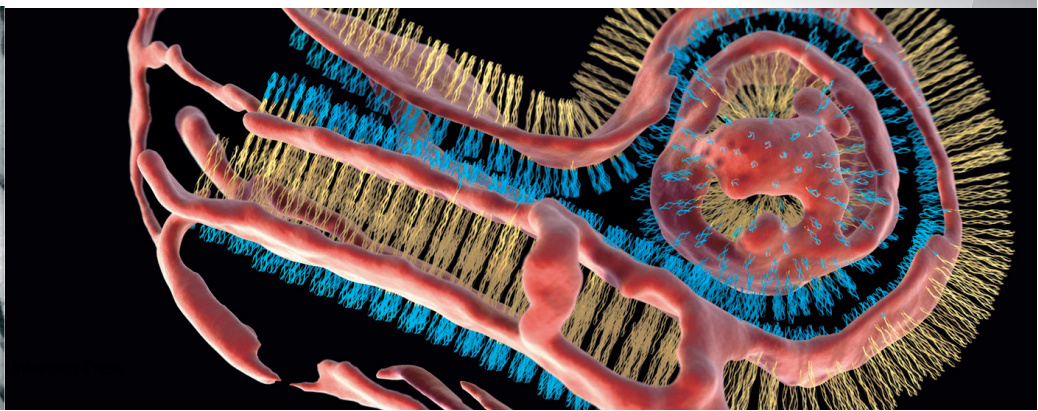
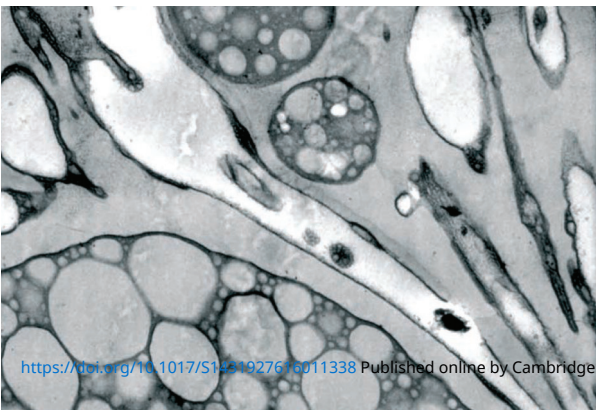
Many requests from customers doing FIB cutting of biological and technical sample blocks have motivated us to relaunch the trim 90 blade: With the trim 90 blade the surface of the blocks as well as the 90° inclined block sides may be trimmed for the following FIB processing.

Please contact us for more information.

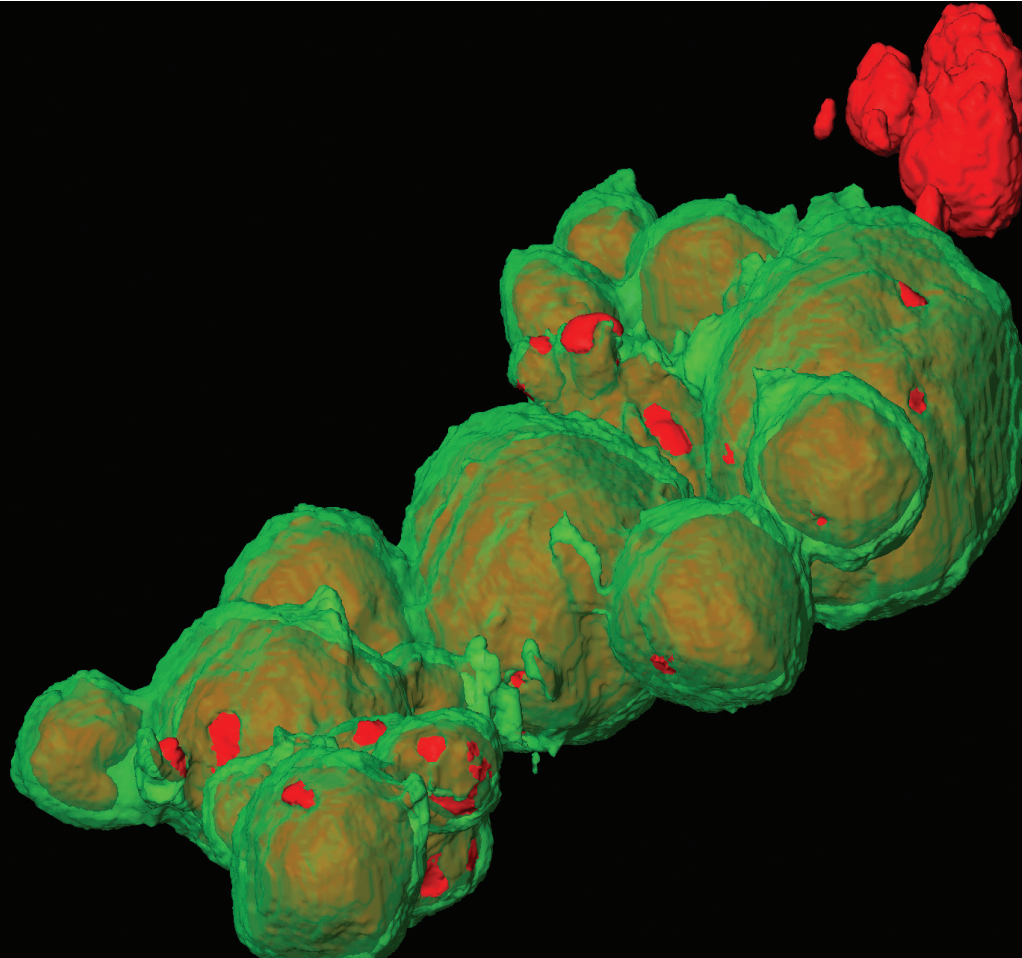
Over 40 years of development, manufacturing, and customer service

DiATOME U.S.

P.O. Box 550 • 1560 Industry Rd. • Hatfield, Pa 19440
Tel: (215) 412-8390 • Fax: (215) 412-8450
email: sgkcck@aol.com • www.emsdiasum.com



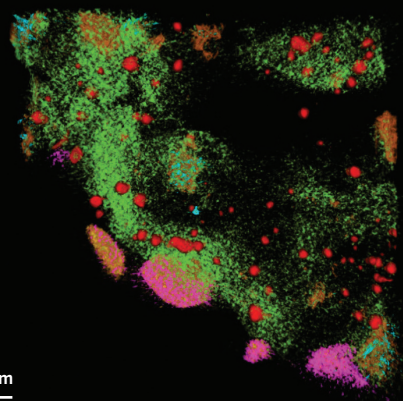
A



B

Ce
Zr
P
Pd
Ca

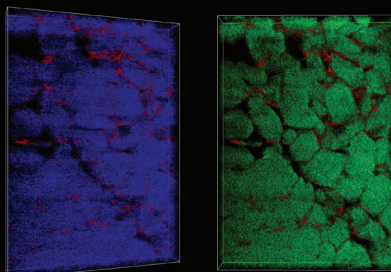
500 nm



C

C
Al
Co

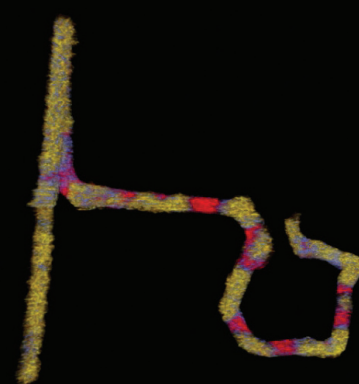
400 nm



D

P
Zn
In

50 nm



A: EDS tomogram of Ag-Pt core-shell nanoparticles. Ag cores are shown in the false color of red, covered by green-colored Pt shells, only a few nanometers in thickness. Sample courtesy Prof. Yi Ding and Prof. Jun Luo, Center for Electron Microscopy, Tianjin University of Technology. **B:** Vehicle-aged automotive catalyst. EDS tomogram showing the distribution of Palladium particles (red) relative to other elements. **C:** Battery anode material. EDS tomograms of Carbon-Cobalt and Carbon-Aluminum. **D:** EDS tomogram of P-Zn-In nanotubes. Sample Courtesy of Dr. Reza Shahbazian Yassar, Michigan Tech University.

Automated 3D EDS with Talos

The ability to perform compositional analysis and visualize the resulting chemical maps in 3D is essential to characterize the true elemental distribution and structure of modern nanomaterials—delivering new insights into structure-function relationships.

Contact your FEI representative today to see how advanced materials characterization methods such as quantitative energy dispersive X-ray (EDS) analysis can bring new heights of discovery to your research.

Discover more at [FEI.com/Talos](https://www.fei.com/Talos)



Explore. Discover. Resolve.

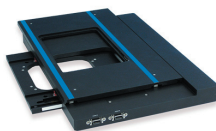


Nano-Positioning

FOR IMAGING & MICROSCOPY



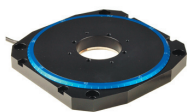
XYZ flexure stage, <1nm resolution



XY piezo motor stage, 100mm



High-speed nanofocus <1nm resolution



Low profile, 720°/sec, 4µrad



Mini stick/slip motor stages: X, XY, XY-rot

Learn more ► www.pi-usa.us

PI (Physik Instrumente) 508.832.3456



Piezo Mechanics



Rotary



Flexure Stages



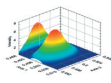
Air Bearings



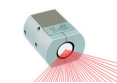
Vacuum Stages



Hexapods



Fiber Alignment



Beam Steering

SOLUTIONS

PRECISION | SPEED | STABILITY - MOTION CONTROL & POSITIONING

Expand your Knowledge of Microscopy with

MSA Membership!

Whether your primary focus is in light, electron, or scanning probe microscopy, or the biological or physical sciences, MSA takes your knowledge to the next level!

Members Receive:

- A personal subscription to MSA's official journal, *Microscopy and Microanalysis*, and MSA's popular bi-monthly magazine, *Microscopy Today*
- Peer Networking through the Society's Focused Interest Groups and Local Affiliated Societies
- Discounts on books, journals, and other educational materials
- MSA Awards Programs, Speaker Opportunities, Scholarships, and much more!

For more information: visit www.microscopy.org or call 1-800-538-3672

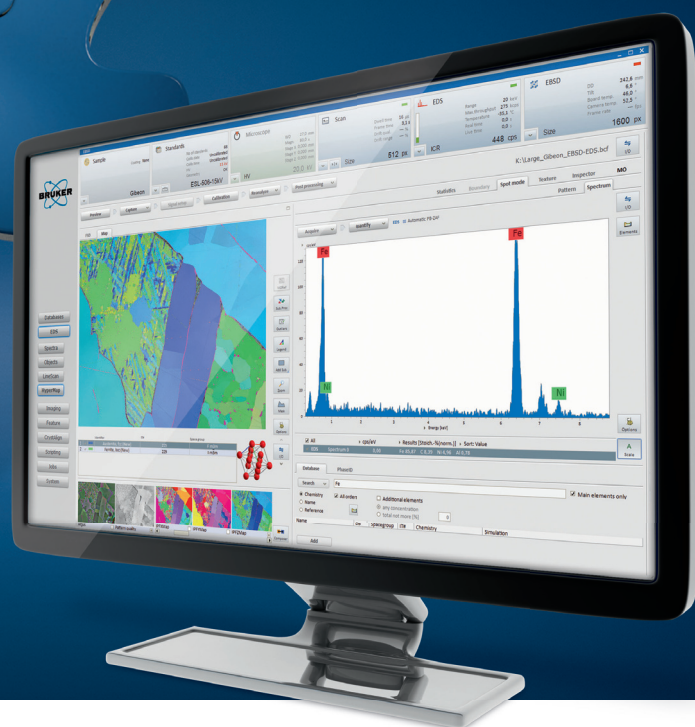


Join MSA Today!

4 Techniques – 1 Workflow.



ESPRIT 2, the only software which combines 4 microanalysis methods.



- Comprehensive management of analysis and results from EDS, WDS, EBSD and Micro-XRF with one software
- Complementary techniques provide you the most accurate and reliable results
- Zeta factor quantification for characterization of thin layers

Someone has to be first.



www.bruker.com/esprit2

Innovation with Integrity

Software

Expand your Knowledge of Microscopy with MSA Membership!

Whether your primary focus is in light, electron, or scanning probe microscopy, or the biological or the physical sciences, MSA takes your knowledge to the next level!

Members Receive:

- A personal subscription to MSA's official journal, *Microscopy and Microanalysis*, and MSA's popular bi-monthly magazine, *Microscopy Today*.
- Peer Networking through the Society's Focused Interest Groups and Local Affiliated Societies.
- Discounts on books, journals and other educational materials.
- MSA Awards Programs, Scholarships, Speaker Opportunities, and more!



Join MSA Today!

Visit: www.microscopy.org or call 1-800-538-3672

Expanding the imaging range with only one microscope.

ZEISS LSM 800





// PRECISION
MADE BY ZEISS

Your versatile confocal microscope for materials research and failure analysis

Expand your imaging range. ZEISS LSM 800 is the one instrument you will need for materials analysis. Characterize 3D surfaces precisely. With no need to change microscopes, you'll save time on set-up. Combine light microscopy and confocal imaging for your 3D analyses. Visit us at M&M - booth #902.

www.zeiss.com/lsm800-mat



MAKE THE
SMART
MOVE TO
PDF-4+

S	Standardized data
M	More coverage
A	All data sets are evaluated for quality
R	Reviewed, edited and corrected prior to publication
T	Targeted for material identification and characterization

Electron Diffraction Simulations on

Over 334,000 entries

- Electron Diffraction Powder Pattern
- Interactive Spot Pattern Display
- Electron Diffraction Backscatter Pattern

Over 271,000 entries

with atomic coordinates

ICDD databases are the only crystallographic databases in the world with quality marks and quality review processes that are ISO certified.

Visit us at M&M Booth #1714



www.icdd.com | marketing@icdd.com

ICDD, the ICDD logo, PDF, and Denver X-ray Conference and design are registered in the U.S. Patent and Trademark Office. Powder Diffraction File is a trademark of the JCPDS-International Centre for Diffraction Data. ©2016 JCPDS—International Centre for Diffraction Data - 4/16

INDEX TO ADVERTISERS

Boeckeler	A5a
Bruker Nano GmbH	A13, A26
Denton Vacuum	A12b, A22b
Diatome	Cover 2, A23
EDAX	A11
Electron Microscopy Sciences, EMS	A18, Cover 3
FEI Company	A6, A24
Hitachi	A9, A20
International Centre for Diffraction Data (ICDD)	A29a
IXRF Systems	A17
JEOL	A16, A21, Cover 4
PI (Physik Instrumente)	A5b, A25a
Protochips	A3
Scientific Instruments & Applications (SIA)	A12a, A22a
ZEISS	A15, A28

EMS has it!

A comprehensive selection of the finest hand-made tweezers for every research requirement, including...

- Medical Tweezers
- High Precisions and Ultra Fine Tweezers
- Thin and Long
- Ergonomic
- Flat Tip
- Ceramic and Ceramic Tipped
- ESD Safe
- General Purpose Tweezers
- Fiber and Fiber Tipped
- EMS Synthetic Fiber Tweezers
- Surface Mount and Optoelectric
- Wafer

and our newest additions:

EMS Gold Coated Tweezers

Finely crafted, high precision tweezers made from anti-acidic, non-magnetic stainless steel, plated with 2 microns of pure 24-carat gold.



EMS High Precision, Diamond Like Carbon (DLC) Tweezers

Feature tips covered in a pure diamond film grown directly on the exposed metallic substrate via an innovative plasma-assisted deposition technique.



now also available in medical grade...

EMS Tweezers

NEW EMS High End Medical Tweezers

EMS is proud to introduce this new category of tweezers. They are all handcrafted to perfect tip symmetry and balance and the surface has an electropolish finish. With high precision fine tips and dot-serrated handles for a perfect grip. All of these tweezers can be sterilized and they are all made from Inox.



EMS is proud to provide a full selection of tweezers and forceps with all hand-crafted to a perfect tip symmetry and balance, high quality and innovative tweezers, that are well suited for many applications:

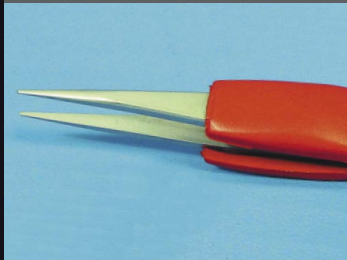
- EM Labs • General Labs • Electronic • Aerospace • Precision Assembly • Optics • Biotech • Chemistry • Surgery • and more**

CONTACT US FOR MORE INFORMATION...

**Electron
Microscopy
Sciences**

P.O. Box 550 • 1560 Industry Rd.
Hatfield, Pa 19440
Tel: (215) 412-8400
Fax: (215) 412-8450
email: sgkcck@aol.com
or stacie@ems-secure.com
www.emsdiasum.com

ESD SAFE
TWEEZERS



ERGONOMIC
TWEEZERS



SUPER SLIM
TWEEZERS



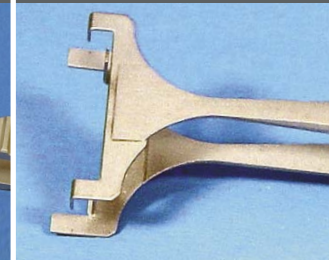
FLAT TIP
TWEEZERS



CERAMIC TIP
TWEEZERS



WAFER
TWEEZERS



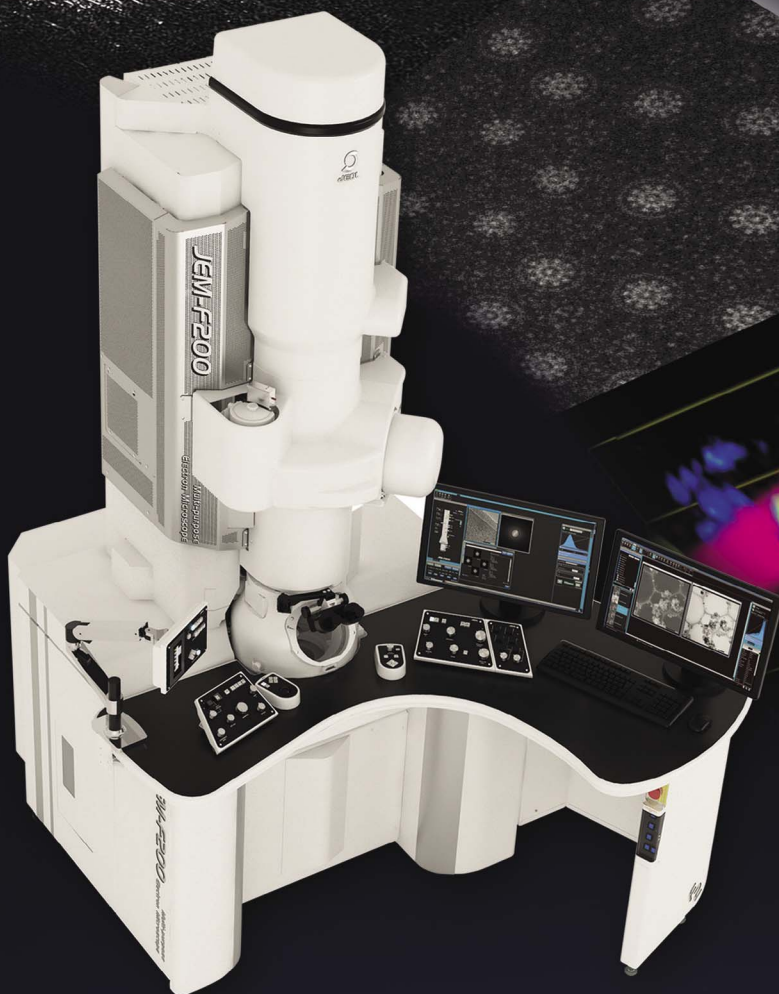
NO COMPROMISE

ATOMIC RESOLUTION + FAST ANALYSIS

The New "Go-To" TEM from JEOL

F2

- Cold FEG boosts probe current
- Fast 3D EDS with dual SDD
- Wide-field STEM-EELS spectrum imaging
- Push-button beam conditions
- Ultra-stable, ultra-fast



10 nm⁻¹

2 nm

JEOL
Solutions for Innovation

www.jeolusa.com
salesinfo@jeol.com • 978-535-5900

Learn more at www.jeolusa.com/F2

*STEM-HAADF image of Quasicrystal • Courtesy of Professor Emeritus K. Hiraga - Tohoku University